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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/012,195	12/05/2001	Lawrence G. Clawson	3402.1007-000	5684
21005 7590 05/16/2007 HAMILTON, BROOK, SMITH & REYNOLDS, P.C. 530 VIRGINIA ROAD P.O. BOX 9133 CONCORD, MA 01742-9133			EXAMINER HANDAL, KAITI V	
			ART UNIT 1764	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/012,195	Applicant(s) CLAWSON ET AL.	
	Examiner Kaity Handal	Art Unit 1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) _____ is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 50 is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 7-8, 1016-19, 25, 40 and 49 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. Claim 8 is objected to because of the following informalities: in lines 15-17, the last sentence contains a grammatical error. Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 3, 5, 7-8, 10, 16-19, 25 and 49 are rejected under 35 U.S.C. 102(e) as being anticipated by Sanger et al. (US 6,793,698 B1).

With respect to claims 1, 5, 7, 19, 25 and 49, Sanger teaches a reactor (fig. 1) comprising: a core reaction zone (135 & 140 & 150 inside shell 180) being configured to conduct exothermic reactions including oxidation (140), and reforming (150); shells (fig. 2, 180 & 205 & 130) each having a shell wall (illustrated), the shells (205 & 130) being arranged coaxially about the core reaction zone (inside 180); a gap (illustrated) being defined between each of the shells' walls to form a plurality of

coaxial zones (illustrated), the reactor being configured to permit heat transfer directly from one zone to another (illustrated); and the reactor being configured so that hydrocarbon feed stock/(through inlet (40)) is preheated by traversing a first zone (205); and wherein an oxygen containing gas/air (130 & 50) is preheated by traversing a second zone (130) which is in fluid communication with oxidation zone ((140) inside core reaction zone shell (180)).

With respect to claim 3, Sanger teaches wherein said reactor is configured so that water/steam is preheated along with the feedstock/(in (220) which is within shell space (205) as illustrated in figure 2) (col. 7, lines 66-67 and col. 8, lines 1-3) in the first zone (205).

With respect to claim 5, Sanger teaches a burner/(combustion zone (195) which is inside shell (205)) which would provide heat to reforming zone (150) inside core reaction zone shell (180).

With respect to claim 8, Sanger teaches a reactor (fig. 1) comprising: a core reaction zone (135 & 140 & 150 inside shell 180) being configured to conduct exothermic reactions including oxidation (140), and reforming (150); shells (fig. 2, 180 & 205 & 130) each having a shell wall (illustrated), the shells (205 & 130) being arranged coaxially about the core reaction zone (inside 180); a gap (illustrated) being defined between each of the shells' walls to form a plurality of coaxial zones (illustrated), the reactor being configured to permit heat transfer directly from one zone to another (illustrated); a burner/(combustion zone (195) which is inside shell space (205)) which would provide heat to reforming zone (150) inside core reaction

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zone shell (180); and the reactor being configured so that hydrocarbon feed stock/(through inlet (40)) is preheated by traversing a first zone (205); and wherein an oxygen containing gas/air (130 & 50) is preheated by traversing a second zone (130) to support burner/combustion (in combustion zone (195)) in the second zone/shell space (205)).

With respect to claim 10, Sanger teaches wherein burner/combustion zone (195) exhaust is flowed through a zone (190) for heat exchange with zone (220) (which is also within shell space (205)).

With respect to claim 16, Sanger teaches wherein said reactor is configured so that said zones (180, 205 and 130) have gaps (illustrated), therefore turbulence flow is expected.

With respect to claims 17-18, Sanger teaches rods/horizontal wall members (illustrated – not numbered) placed in the zones (205 & 130).

4. Claims 40 is rejected under 35 U.S.C. 102(b) as being anticipated by Woods et al. (US 6,835,354 B2).

With respect to claim 40, Woods teaches a reactor/reformer (1) comprising:

- A core reaction zone (34 & 32 & 30 inside shell (20)) configured to conduct exothermic reactions (in partial oxidation zone (30));
- a plurality of nested shells (20, 16, 54, 52) having a gap defined between each of the successive shells to form a plurality of coaxial zones between adjacent shells

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(illustrated), the innermost shell (20) surrounding the core reaction zone (34 & 32 & 30);

- a stream (within shell 20 and pipe 21) of heated material/hot fluid produced by a first exothermic reaction including partial oxidation in catalyst (30);
- a second stream of heated material/combustion gases produced by a second exothermic reaction from surface combustor (78);
- and wherein the streams of heated materials are each routed through coaxial zones adjacent to at least one coaxial zone containing hydrocarbon feedstock/chamber (18) inside zone/shell (20); and wherein both the first exothermic reaction (inside shell (16)) and the second exothermic reaction (inside shell (54)) occur within the plurality of nested shells (as illustrated).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mertens et al. (US 6,835,354 B2).

With respect to claims 1 and 3, Merten teaches a reactor (fig. 1) comprising: a core reaction zone/(burner (4) (inside shell 1)) being configured to conduct exothermic reactions including combustion; shells (12 & 27 & 28 & 26 & 25) each

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having a shell wall (illustrated), the shells being arranged coaxially about the core reaction zone (inside 1); a gap (illustrated) being defined between each of the shells' walls to form a plurality of coaxial zones (illustrated), the reactor being configured to permit heat transfer directly from one zone to another (illustrated); and the reactor being configured so that hydrocarbon feed stock (and water)/(through inlet (15) passing within (14)) is preheated by traversing a first zone (12); and wherein an oxygen containing gas/air (3) is preheated by traversing a second zone (27).

With respect to claim 2, Merten teaches wherein said reactor is further configured so that water is preheated in a third zone/annular space (30).

Response to Arguments

Prior Art

Applicant's arguments with respect to claims 1-3, 5, 7-8, 10, 16-19, 25, 40, 49 and 50 have been considered but are moot in view of the new ground(s) of rejection.

Allowable Subject Matter

Claim 50 is allowed.

The following is a statement of reasons for the indication of allowable subject matter: the reactor as claimed having four fluid flows, each in a different coaxial zone, wherein the coaxial zones are formed of successive shells about the core reaction zone is missing in any prior art of record including that of Dantowitz (US 3,541,729).

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kaity Handal whose telephone number is (571) 272-8520. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KH

5/12/2007


Glenn Caldarola
Supervisory Patent Examiner
Technology Center 1700